REMARKS

STATUS OF THE CLAIMS

Claims 1, 3-4, 9-11, 15-28 and 38-41 are pending as shown in the Amendment After Final filed July 6, 2005 and which claim amendments were entered following the filing of a request for continued examination (RCE) on August 25, 2005.

35 U.S.C. § 103

Claims 1, 3-4, 9-11, 15-28 and 39-41 were again rejected under 35 U.S.C. § 103 as allegedly obvious over Krall in view of U.S. Patent No. 6,203,779 (hereinafter "Ricci"). (Final Office Action, pages 3-5). Claims 1, 3-4, 9-11, 15-28 and 38-41 were also again rejected under 35 U.S.C. § 103 as allegedly over Krall in view of Ricci and further in view of U.S. Patent No. 4,997,861 (hereinafter "Hechenberger"). *Id.*

In response to Applicants' noting that the references do not teach the particularly claimed molecular weight limitation, the Examiner asserted that Ricci's polymers have a molecular weight of "about 200,000" and that this somehow includes polymers having molecular weights "slightly greater than 200,000." (Final Office Action, paragraph 4). The Examiner also asserted that Ricci employs the "same polymers" as claimed and that, absent a showing of unexpected results, it is merely different in degree to use the polymers of the claimed molecular weights. (Final Office Action, paragraph 5, citing Deutsche Gold-und-Sibler (1966)). With regard to *In re Kerkhoven* (1980), the Examiner points to *In re Susi* (1971) and *In re Crockett* (1960) as allegedly supporting the notion that the claimed compositions are obvious over the references. (Final Office Action, paragraph 7).

Applicants again traverse the rejections and supporting remarks.

To reiterate, the pending claims are drawn to compositions comprising: (1) a matrix-forming component comprising alkyl cyanoacrylate monomers, a stabilizer and a plasticizer; (2) a solid aggregate comprising a radiopacifier; and (3) a polymeric **non**-cyanoacrylate rheology modifying agent having a molecular weight greater than 200,000 and selected from the recited group. Such compositions are not taught or suggested by any combination of Krall and Ricci.

A. The References Do Not Teach or Suggest All the Elements of the Claims

As previously noted, the burden is on the Office to show that the proposed combination of references teaches or suggests all the limitations and that there is a motivation to combine the references as set forth in the rejection. *See, e.g.,* M.P.E.P. §§ 2142-2143.

Here, there is no combination of Krall and Ricci that teaches or suggest all the elements of the claimed compositions.

In particular, there is nothing in the primary reference (Krall) about **non**-cyanoacrylate rheology modifying agents as claimed, let alone rheology modifying agents having molecular weights greater than 200,000.

For its part, Ricci does not teach anything about matrix-forming materials comprising alkyl cyanoacrylate monomers, a stabilizer and a plasticizer and/or a solid aggregate comprising a radiopacifier, as claimed. Instead, the fluid compositions of Ricci are made up of one biocompatible polymer (cyanoacrylate or, alternatively, non-cyanoacrylate polymers having a molecular weight of 200,000 or less), a biocompatible solvent and, optionally, a contrast agent. Ricci does not teach or suggest non-cyanoacrylate polymers having molecular weights or greater than 200,000.

Thus, Krall does not teach or suggest compositions non-cyanoacrylate comprising rheology modifying agents as claimed; Ricci does not teach non-cyanoacrylate polymers having molecular weights greater than 200,000; and neither Krall nor Ricci teach or suggest combining cyanoacrylate and non-cyanoacrylate polymers in the same composition, as claimed.

B. There is No Motivation to Modify the References or to Combine them As Set Forth in the Rejection

Moreover, there is no motivation to combine the references as set forth in the rejection. In the instant case, the rejection is premised on at least two significant modifications to the references, namely (1) combining cyanoacrylate polymers and non-cyanoacrylate polymers into the same composition and, in addition, (2) modifying Ricci's polymers to have molecular weights greater than 200,000. There is no motivation in the references themselves or in the state of the art to make either modification.

B.1. There is No Motivation to Combine Cyanoacrylate Polymers and Non-Cyanoacrylate Rheology Modifying Agents Into a Single Composition

With regard to combining cyanoacrylate polymers (Krall) and non-cyanoacrylate polymers (Ricci) in a single composition, the Examiner has continued to assert that the motivation to combine somehow derives from the notion that Krall and Ricci relate to "embolic" compositions. (Final Office Action, paragraph 5).

However, this is **not** a sufficient ground to support a *prima facie* case of obviousness. In fact, the record is clear that the claimed compositions, which include both alkyl cyanoacrylate monomers and non-cyanoacrylate polymers, represent a non-obvious improvement over compositions including only one of these polymers (*see, e.g.,* page 3, lines 18-20 and page 25, lines 15-25):

> There is no suggestion or recognition [in Krall] that such properties can be improved by a non-cyanoacrylate rheology modifying agent.
>
> **
>
> The composition has the desired viscosity and cohesive characteristics to administer into an ionic fluid environment, such as blood. The composition forms a solid structure upon contact with the ionic environment. ... The composition and method of present invention can be advantageously used to block blood flow to certain tissues, areas, or cavities in the vasculature.

As set forth in the specification, Krall does not in any way suggest adding non-cyanoacrylate rheology modifying agents to their cyanoacrylate resins.

For its part, Ricci also fails to suggest using non-cyanoacrylate polymers in the same composition as cyanoacrylate polymers. Indeed, Ricci draws a clear distinction between cyanoacrylate prepolymers and non-cyanoacrylate polymers such as cellulose diacetate – Ricci unambiguously teaches that they are used separately (Ricci, Abstract and col. 1, lines 11-14, emphasis added):

> Sealing of endoleaks is achieved by injection of **either** a biocompatible polymer **or** prepolymer fluid composition into the endoleak which composition in situ solidifies to seal the leak.

Ricci's teachings that cyanoacrylates and non-cyanoacrylates such as cellulose diacetate are distinct compositions that are to be used in the alternative is also mirrored in the claims of this patent – claim 1 is drawn to a fluid composition generally, claims 2-12 specify that the fluid composition is a biocompatible polymer; while claims 13-14 specify that the fluid composition include a biocompatible prepolymer.

In light of Krall's and Ricci's failure to suggest compositions including both cyanoacrylate and non-cyanoacrylate rheology modifying agents as claimed, there is no motivation to combine the references as set forth in the rejection and, accordingly, the rejection cannot be sustained.

B.2. There is No Motivation to Modify Ricci's Non-Cyanoacrylate Polymers to Have a Molecular Weight Greater than 200,000

Similarly, it is error to assert that it would have been obvious to the skilled artisan to modify the molecular weight of Ricci's rheology modifying agents to arrive at the rheology modifying agents having molecular weights greater than 200,000, as claimed. In this regard, the Examiner continues to assert that the motivation to increase the molecular weight of the polymers disclosed in Ricci derives from the fact that increasing molecular weight was known to increase viscosity. (Final Office Action, paragraph 5)

However, Ricci is clear that 200,000 is the maximum average molecular weight of such cellulose diacetate polymers and that 200,000 provides more than sufficient viscosity (col. 5, lines 23 to 35 of Ricci, emphasis added):

> Preferred biocompatible polymers include cellulose diacetate and ethylene vinyl alcohol copolymer. Cellulose diacetate polymers are either commercially available or can be prepared by art recognized procedures. In a preferred embodiment, the number average molecular weight, as determined by gel permeation chromatography, of the cellulose diacetate composition is from about 25,000 to about 100,000 more preferably from about 50,000 to about 75,000 and still more preferably from about 58,000 to 64,000. The weight average molecular weight of the cellulose diacetate composition, as determined by gel permeation chromatography, is preferably from **about 50,000 to 200,000** and more preferably from about 100,000 to about 180,000.

When considered in context, it is clear that Ricci does not teach the "same" polymers

because their molecular weights are different.

Furthermore, it is untenable to assert that the difference in molecular weight as between the claimed rheology modifying agents and Ricci's cellulose diacetates is either negligible or an obvious optimization of Ricci's polymers.

Ricci does not teach or suggest that the molecular weight of the cellulose diacetate and ethylene vinyl alcohol copolymers should ever exceed 200,000, for any reasons, including in order to increase viscosity. Rather, as clearly set forth above, by its own terms Ricci teaches that a molecular weight of no greater than 200,000 was sufficient to impart the desired viscosity for the intended embolic use, namely to stop leaks when used in combination with an endovascular prosthesis.

Furthermore, even if Ricci did teach polymers having a molecular weight greater than 200,000 (which it does not), there is still nothing the Examiner has pointed to in the references or state of the art generally that suggest combining cyanoacrylates and non-cyanoacrylates as claimed.

Thus, the cited references, and state of the art as a whole, do not teach or suggest each element of the claimed compositions. Nor has the Office met its burden of showing that the requisite motivation to (1) modify Ricci's polymers to have higher molecular weights; and/or (2) combine these modified polymers with Krall.

The alleged motivation to combine (use as embolic compositions) is not present because none of the references teach or suggest advantages deriving from the combination. Without the benefit of Appellants' disclosure, a skilled artisan would have had no motivation and no reasonable expectation that modifying Ricci's rheology modifying agents to have molecular weights greater than 200,000 and then adding these agents to Krall's compositions would provide improved compositions, both in terms of embolic characteristics and delivery. Accordingly, a *prima facie* case of obviousness has not been (and indeed cannot be) presented by the Office, as such a rejection can only be based on improper hindsight reconstruction. Withdrawal of the rejection is in order.

C. Unexpected Results

Furthermore, although not required because the Office has failed to present a *prima facie* case of obviousness, evidence regarding unexpected results is already of record. For instance, the as-filed specification makes it clear that combining non-cyanoacrylate rheology modifying agents with known cyanoacrylate embolic resins significantly improves viscosity, cohesiveness, suspension of dense radiopacifiers, radiopacity, hydrolytic stability, adhesiveness to the target tissue and/or ease of delivery via microcatheter (decreases adhesiveness to the catheter). *See, e.g.,* page 3, lines 22-30; page 7, lines 26-29; page 8, line 29 to page 9, line 5; and page 17, line 31 to page 18, line 7, which latter passage is reproduced below):

> A rheology modifying agent can impart properties of the liquid injectable composition, such as improved viscosity, improved cohesiveness, improved suspension, stability of dense radiopacifying powders and additional radiopacity. A solidified composition including a polymeric rheology modifying agent can have properties demonstrating improved hydrolytic stability when compared to cyanoacrylate compositions containing pre-polymerized cyanoacrylate.

Thus, although a *prima facie* case of obviousness has not been made out (and indeed the references contain no supporting basis), additional factual evidence or record in the present case lends even further support to the non-obviousness of the claimed methods.

D. The Cases Cited By the Office Are Not Relevant

Furthermore, the Office's reliance on *Deutsche Gold-und-Sibler*; *In re Susi;* and *In re Crockett* is misplaced. An inquiry into obviousness is fact dependent and the claims, disclosure and state of the art in the cited cases – all of which are at least 35 years old – are entirely different from those in the case at hand.

Like *In re Kerkhoven* and contrary to the Examiner's assertion, the claims at issue in *In re Crockett* were process claims involving use of two known compositions. Thus, the claims and fact pattern of the pending case are distinguishable from those in *In re Crockett.*

The issue in *Deutsche Gold-und-Sibler* was whether structurally similar compositions were non-obvious because of different uses. Here, the claimed composition is not structurally similar to Krall (as it contains a rheology modifying agent) or to Ricci (as it contains a matrix

forming component and solid aggregate material). Therefore, *Deutsche Gold-und-Sibler* is not relevant to the instant case.

In re Susi relates to whether inclusion of known additives to previously described compositions imparts patentability. Here, Ricci's compositions are not mere "additives" that a skilled artisan would view as "obvious additions" to Krall's compositions.

If the Examiner is asserting that non-cyanoacrylate rheology modifying agents were known "additives" at the time of filing, Applicants request, pursuant to 37 C.F.R. § 1.104(d)(2) that the Examiner support this assertion with an affidavit. Furthermore, if the rejection is maintained and supported with an affidavit, 37 C.F.R. § 1.104(d)(2) requires that the affidavit shall be subject to contradiction by Applicants own affidavits or evidence. Accordingly, Finality must be withdrawn in order to Applicants to be afforded an opportunity to submit such evidence.

In sum, a *prima facie* case of obviousness has not been established. Krall and Ricci do **not** teach or suggest all the elements of the claims; there is no motivation to combine the references as suggested; and no combination that would result in the claimed compositions. Krall does not teach or suggest combining cyanoacrylates with non-cyanoacrylate rheology modifying agents as claimed. Ricci clearly teaches that cyanoacrylates and cellulose diacetate are to be used in separate composition and also teaches that the non-cyanoacrylate polymers have molecular weights less than 200,000. Accordingly, the skilled artisan would have no motivation to make the combination set forth by the Office. Hechenberger does not in any way make up for the deficiencies of Krall and Ricci. Therefore, without the benefit of Appellants' disclosure, a skilled artisan would have had no motivation to combine a matrix-forming component (alkyl cyanoacrylate monomers, a stabilizer and a plasticizer) with a solid aggregate material and a polymeric non-cyanoacrylate rheology modifying agent having a molecular weight greater than 200,000. The references do not teach all the claimed elements and the motivation to combine the references as set forth in the rejection is not present in the references themselves. Accordingly, the rejections under 35 U.S.C. § 103 should be withdrawn.

CONCLUSION

Applicants believe that the claimed subject matter is now in condition for allowance and early notification to that effect is respectfully requested. If any issues remain to be addressed, the Examiner is encouraged to telephone the undersigned.

Respectfully submitted,

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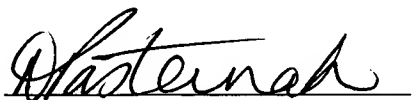
By: 
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